

Armed Forces College of Medicine

AFCM



Temporal& Infratemporal Fossa

By professor DR Shahira Youssef

INTENDED LEARNING OBJECTIVES (ILO)



By the end of this lecture the student will be able to:

1. Describe muscles of mastication attachments, actions & nerve supply
2. Discuss structure, movements and nerve supply of temperomandibular joint (TMJ).
3. Correlate structure with clinical dislocation

Key features



1. Action & nerve supply of muscles of mastication
2. Movements and nerve supply of temperomandibular joint (TMJ).

Temporal fosssa

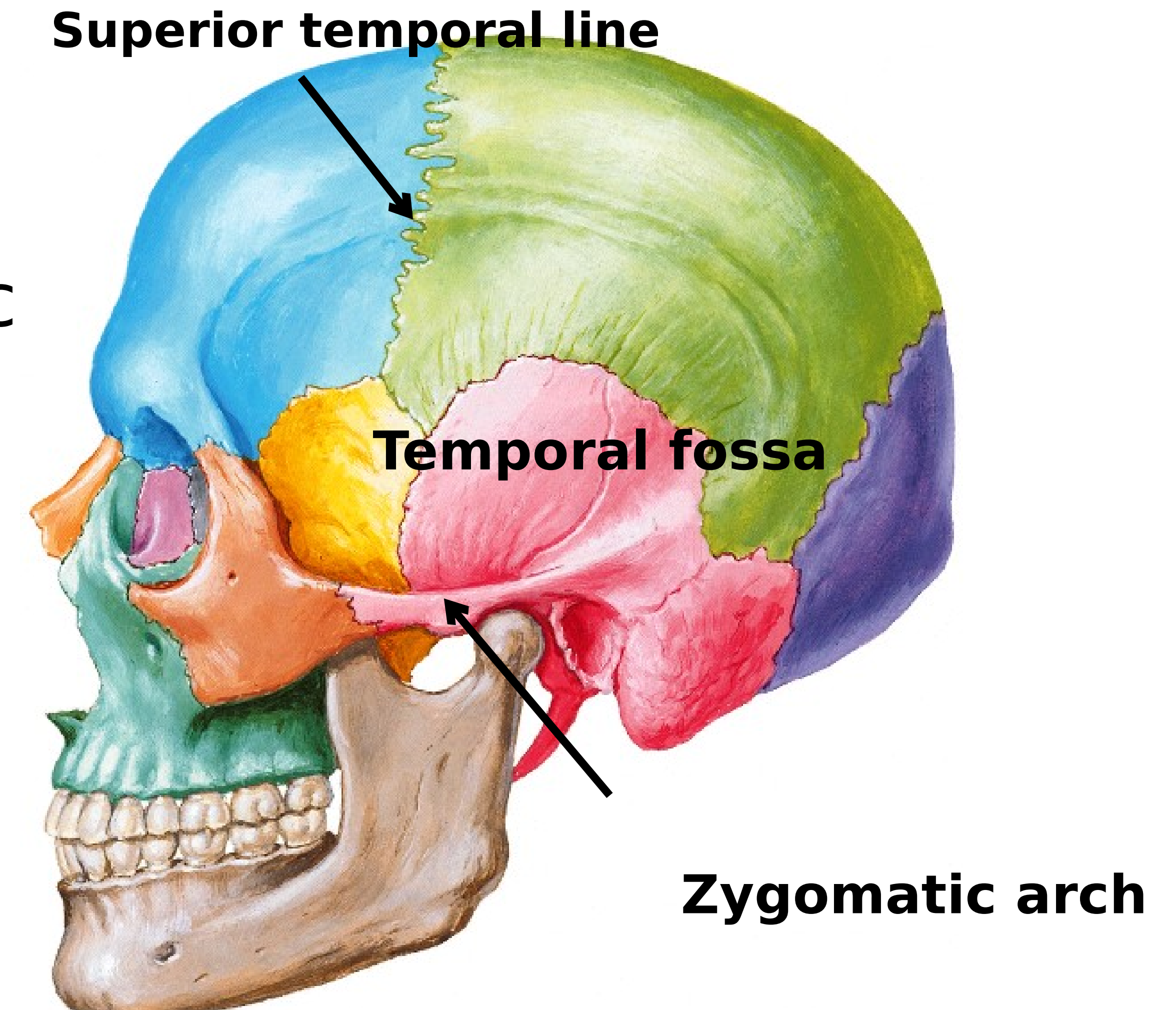


Temporal fossa:

Contents :

1- Temporal fascia

2- Temporalis :a muscle of mastic



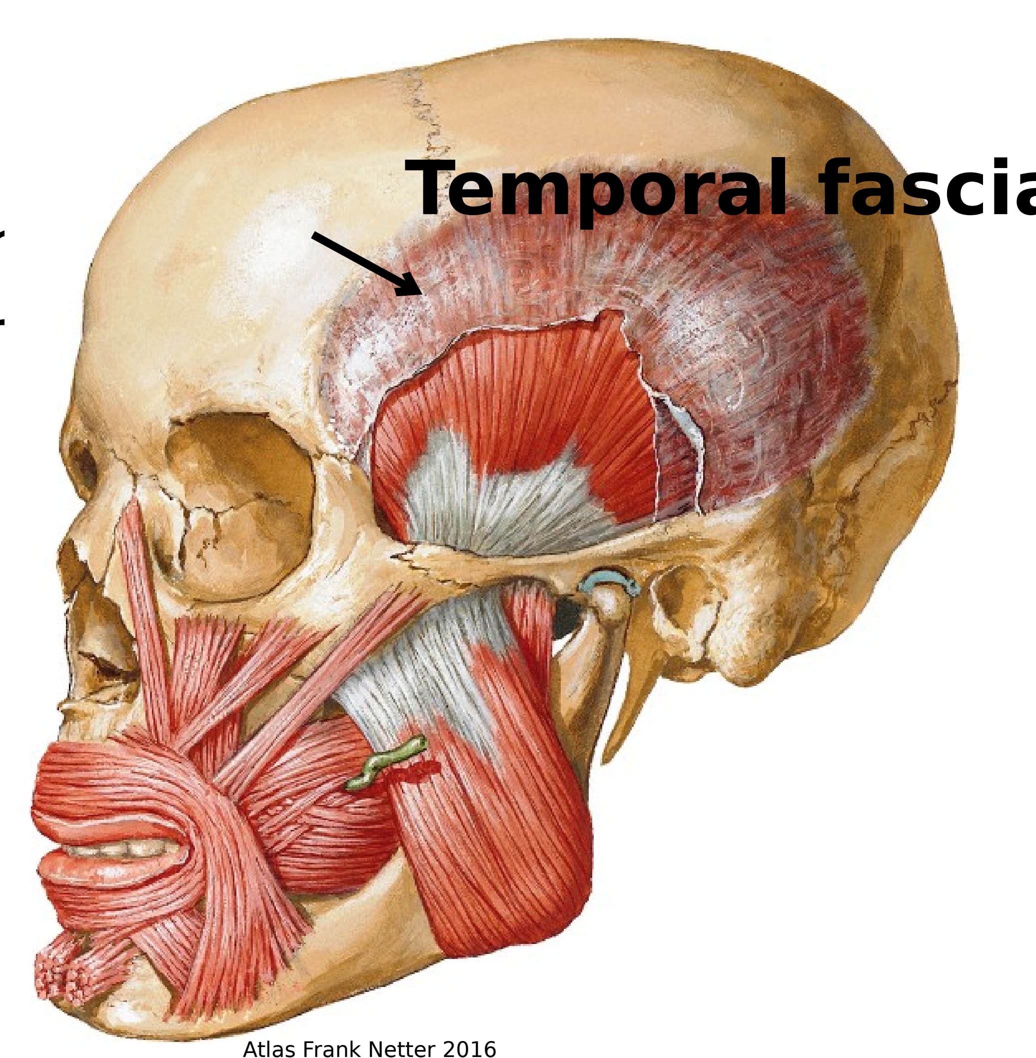
Atlas Frank Netter 2016



Temporal Fascia

A layer of fascia

- attached above to superior tempor
- below to the upper border of zygor



Atlas Frank Netter 2016

•

Temporalis



Origin:

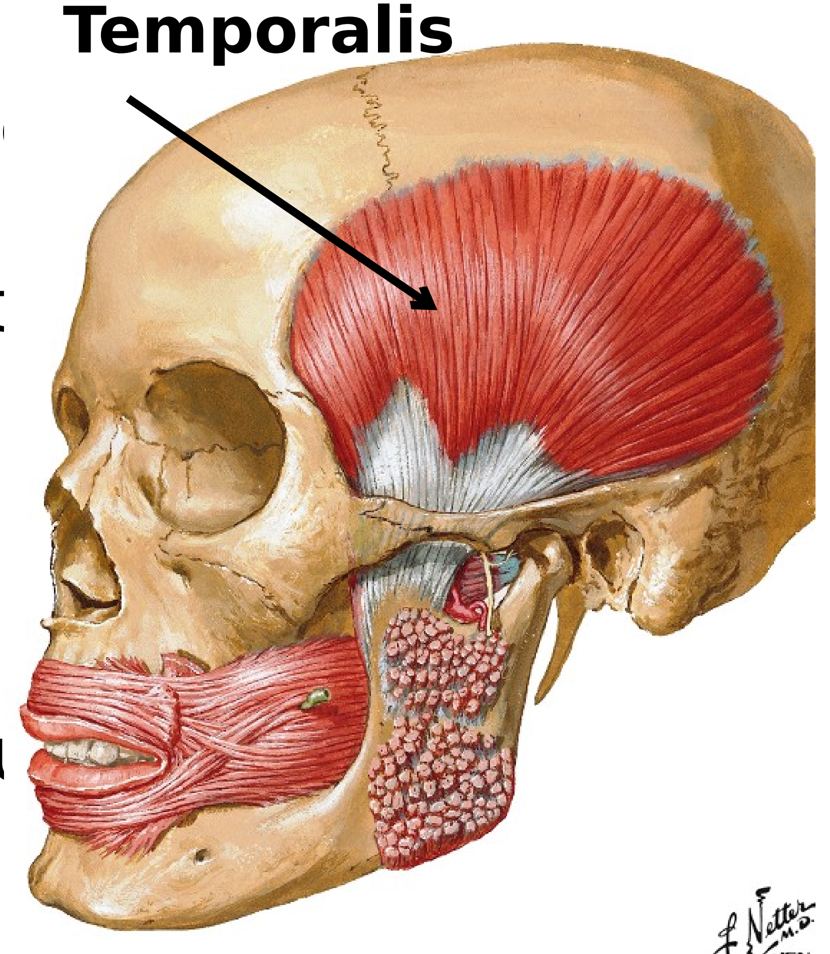
floor of temporal fossa and temporal fas

Insertion :

- all aspects of coronoid process except lateral
- anterior border of ramus of mandible till last molar

Action:

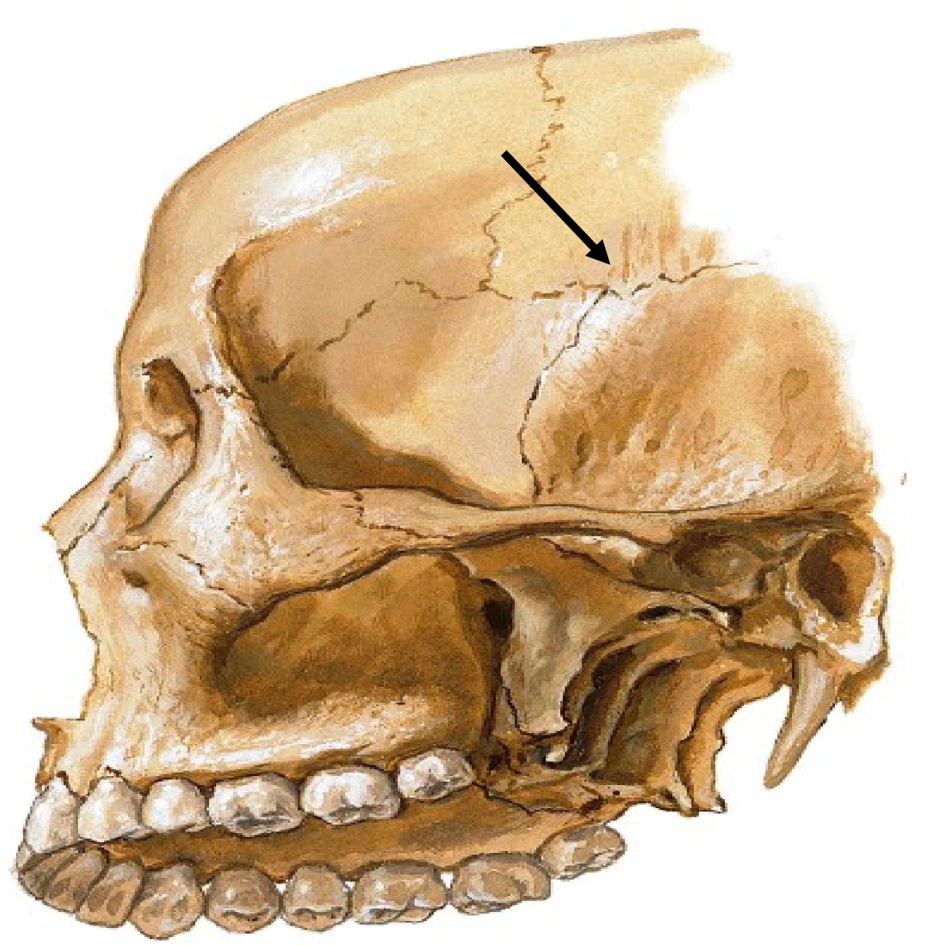
- ❑ Elevation of mandible (antigravity mu
- ❑ Retraction of mandible by posterior horizontal fibers



Atlas Frank Netter 2016

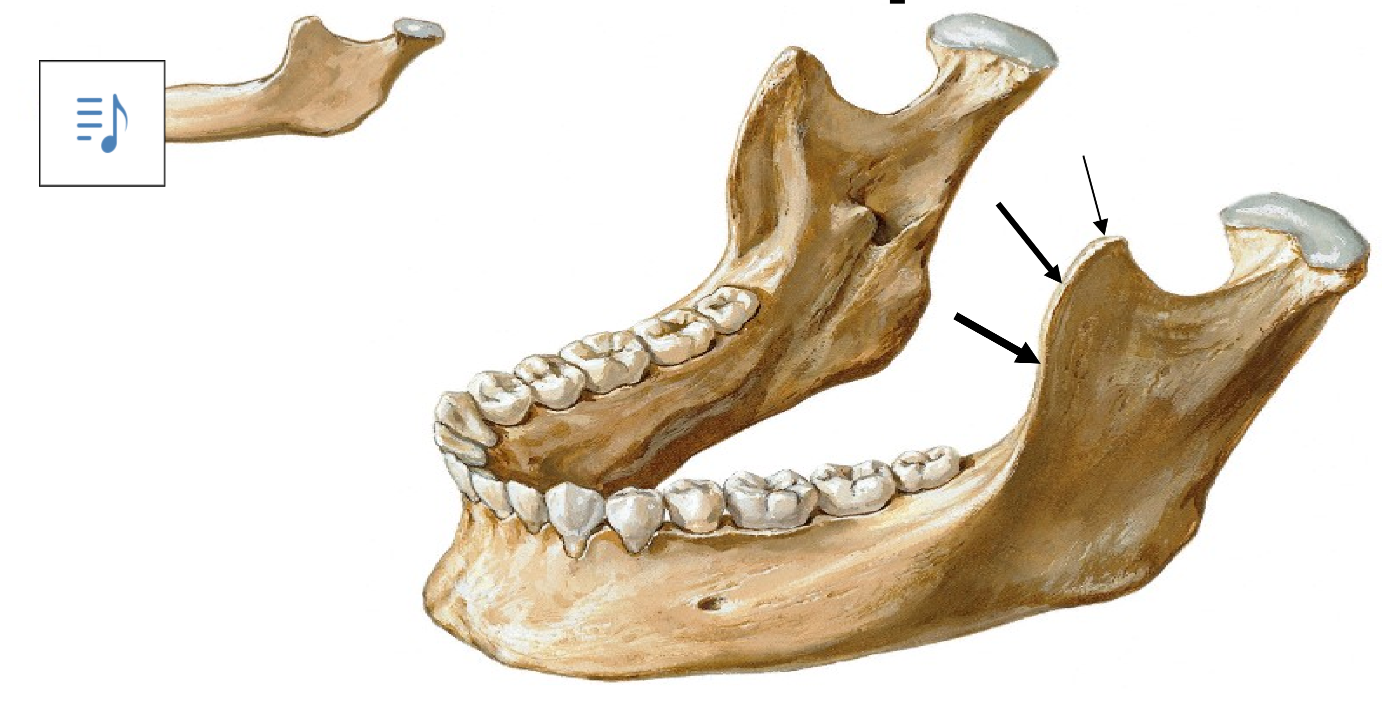
Temporalis

Floor of temporal fossa



Atlas Frank Netter 2016

Coronoid process



Atlas Frank Netter 2016

Masseter



Origin:

Superficial head:

anterior two thirds of lower border of zygomatic arch

Deep head:

posterior one third of lower border of zygomatic arch

Insertion : lateral surface of ramus

Action :

1. elevation by deep vertical fibers
2. Protrusion by superficial oblique fibers

Masseter



Masseter

Ramus

Atlas Frank Netter 2016

Lateral pterygoid



- **Origin**:

Upper head:

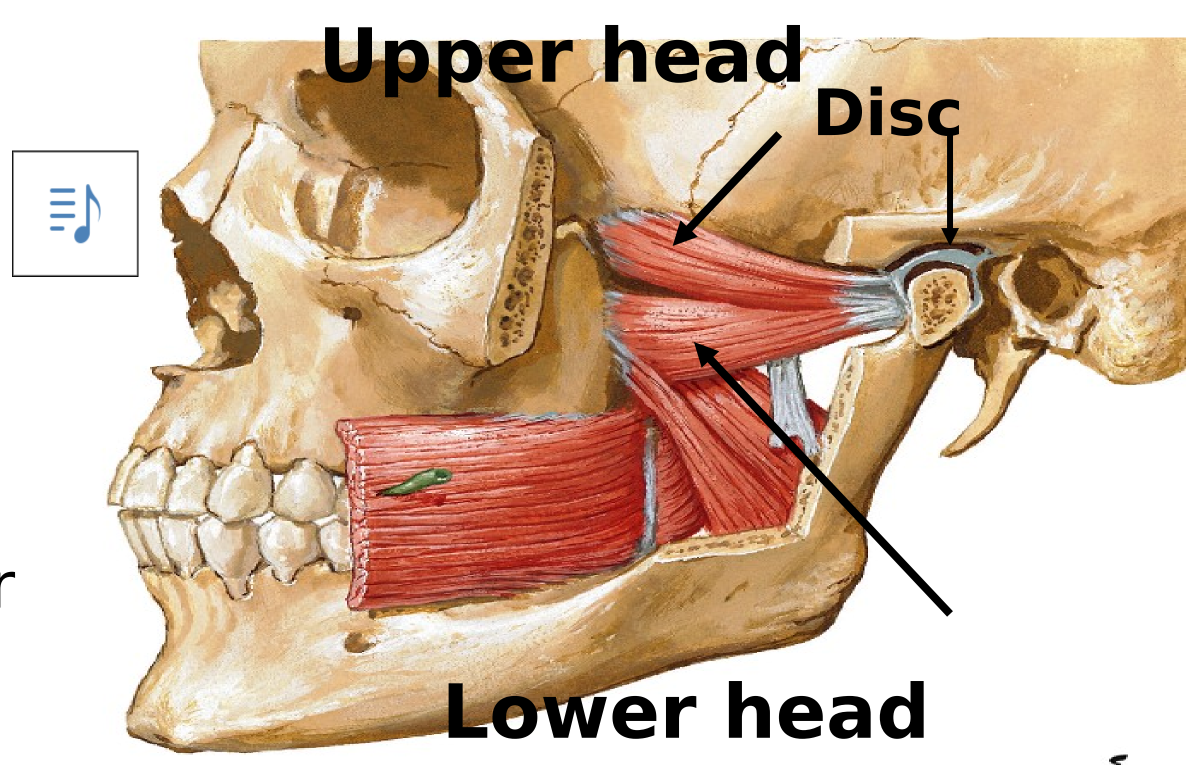
infratemporal surface & crest of greater wing of sphenoid bone

Lower head:

lateral surface of lateral pterygoid plate

- **Insertion**:

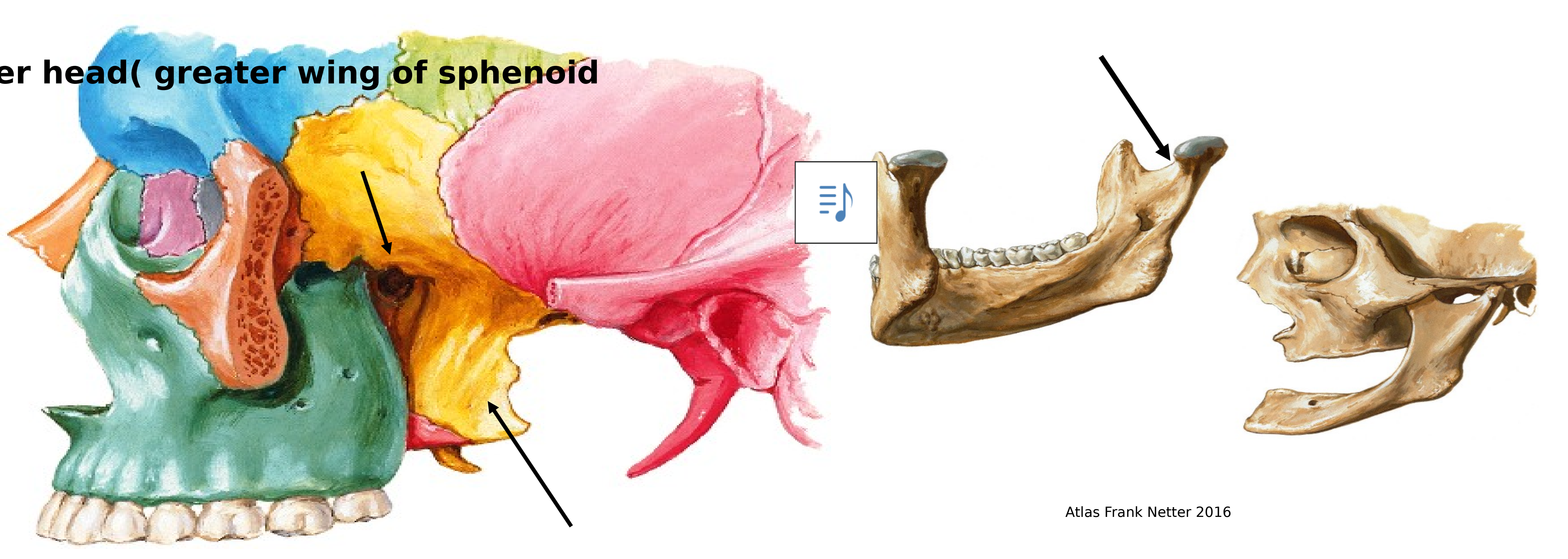
front of neck, capsule &articular disc of tempermandibular joint



Atlas Frank Netter 2016

Lateral pterygoid

Front of neck



Atlas Frank Netter 2016

Lateral pterygoid plate

ower head(lateral pterygoid plate

Action of lateral pterygoid



<u>Action</u>:

1. **Depression of** mandible
2. Protrusion of mandible
3. Side to side movement : medial and lateral pterygoid of one side act together push mandible to opposite side when acting alternatively [illegible]h muscles of the opposite side they produce side to side movement

Medial pterygoid

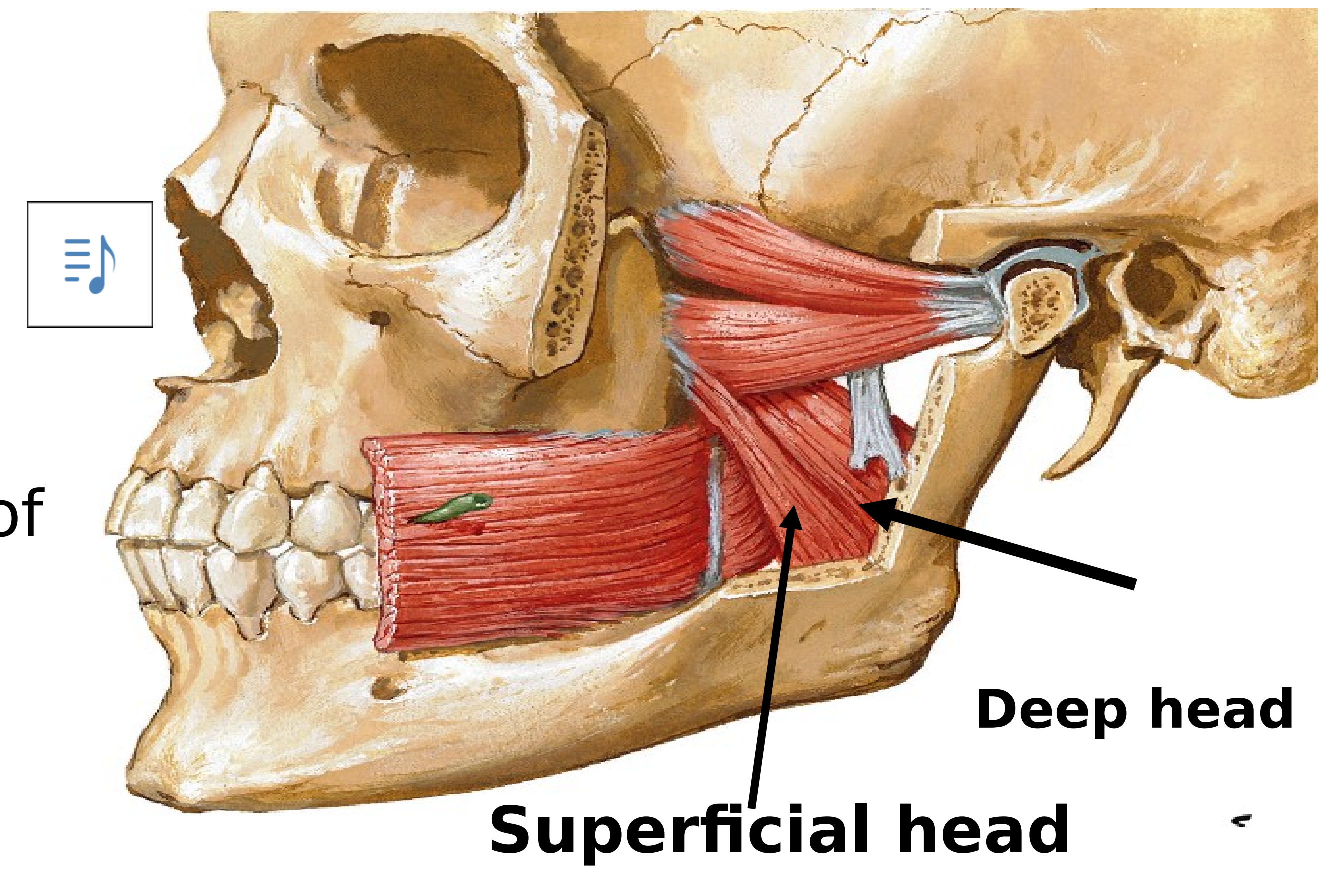


- **Origin**

Superficial head: maxillary tuberosity

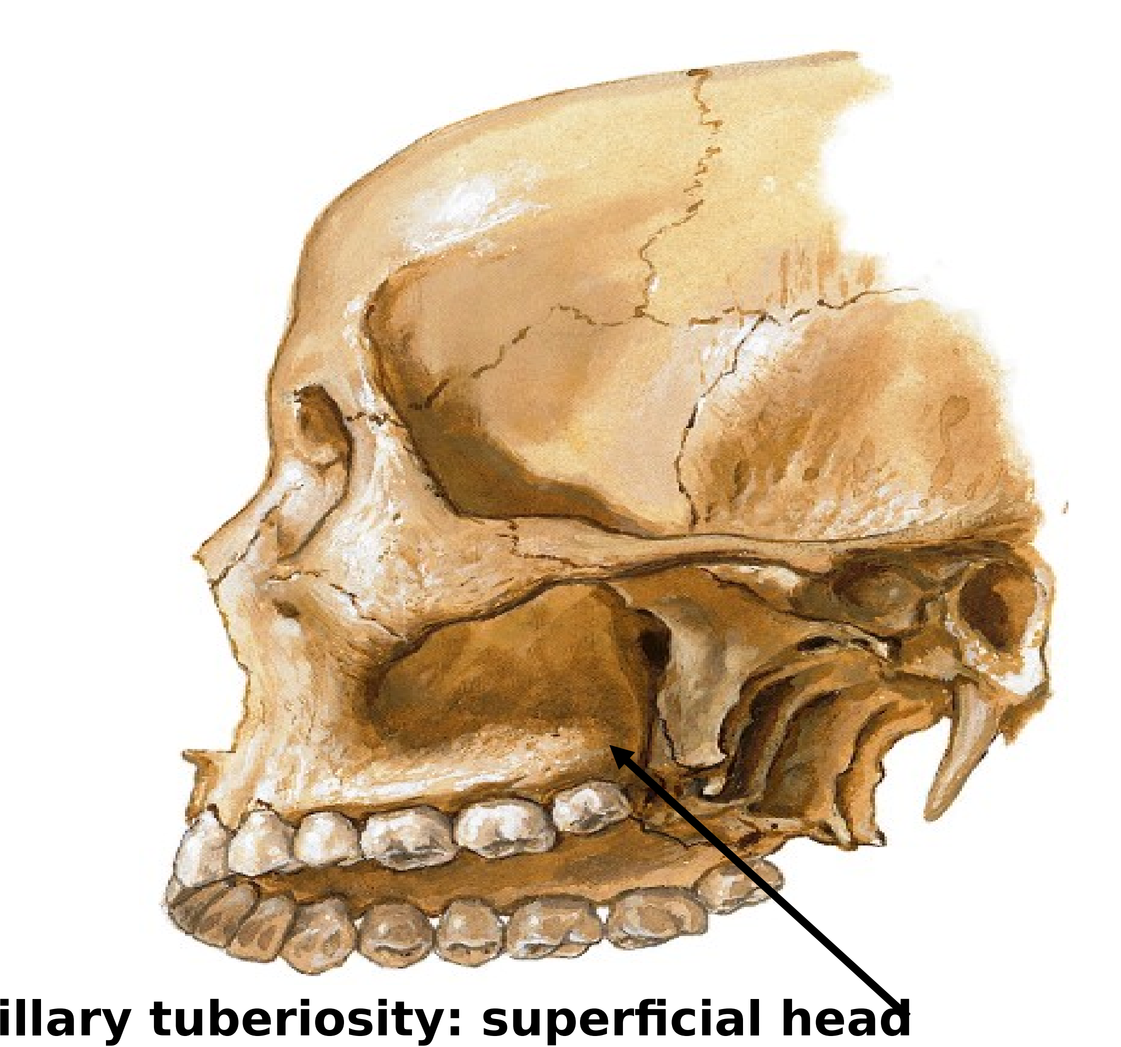
Deep head: medial surface of lateral pterygoid plate

- **Insertion:** medial surface of angle of mandible
- **Action** : elevation, protrusion of mandible & side to side movements



Atlas Frank Netter 2016

Medial pterygoid



illary tuberiosity: superficial head

insertion :Angle of mandible

Atlas Frank Netter 2016

Nerve supply



- All muscles of mastication are supplied by **anterior** division of **mandibular nerve** except **medial pterygoid** from **trunk** of mandibular nerve (MCQ)

Questions

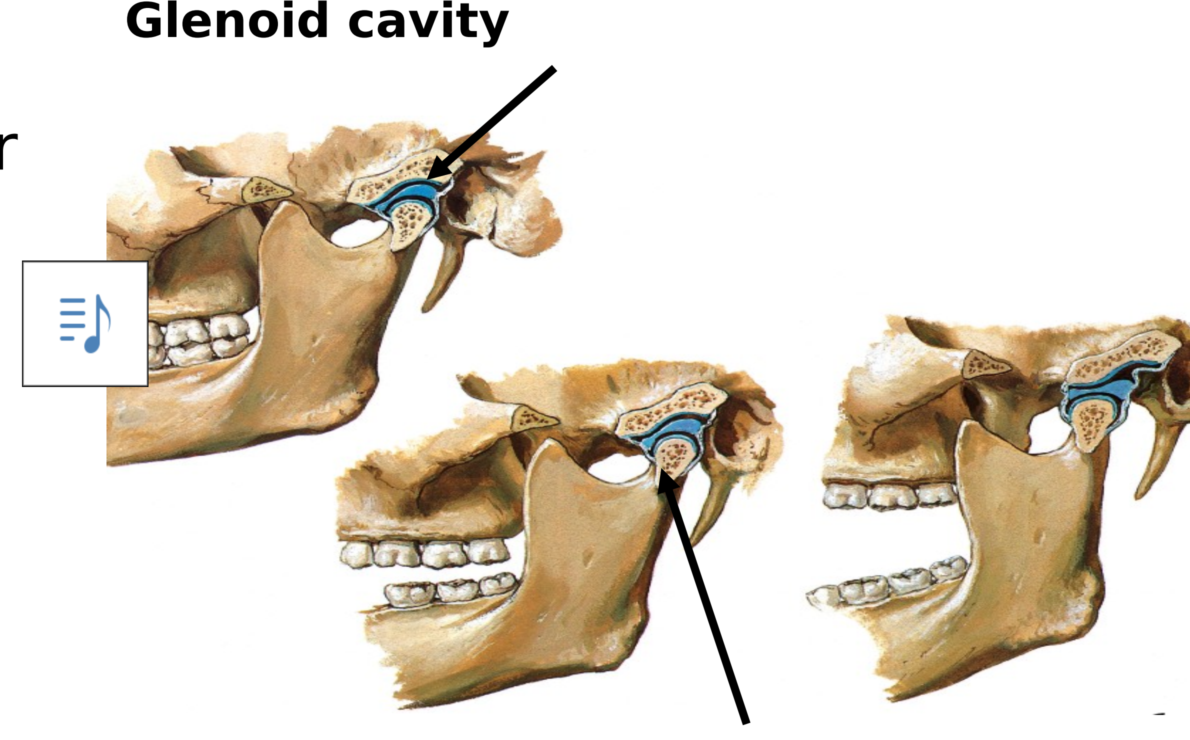


- Which muscle depresses mandible
- Which muscles protrude mandible
- Which muscles of mastication are present in infratemporal fossa

Temporomandibular joint TMJ



- Type: Synovial **condylar** joint
- it is formed by articulation of head of mandible & mandibular fossa and articular tubercle
- Articular surface is covered by fibro- cartilage
- Capsule is attached to the margins of articular surface
- Synovial membrane lines fibrous capsule



Atlas Frank Netter 2016

Temporomandibular joint TMJ



A

Upper joint cavity
Mandibular fossa
Articular disc
Synovial membrane
Capsule
Fibrocartilage on articular surface
Lower joint cavity
Articular tubercle

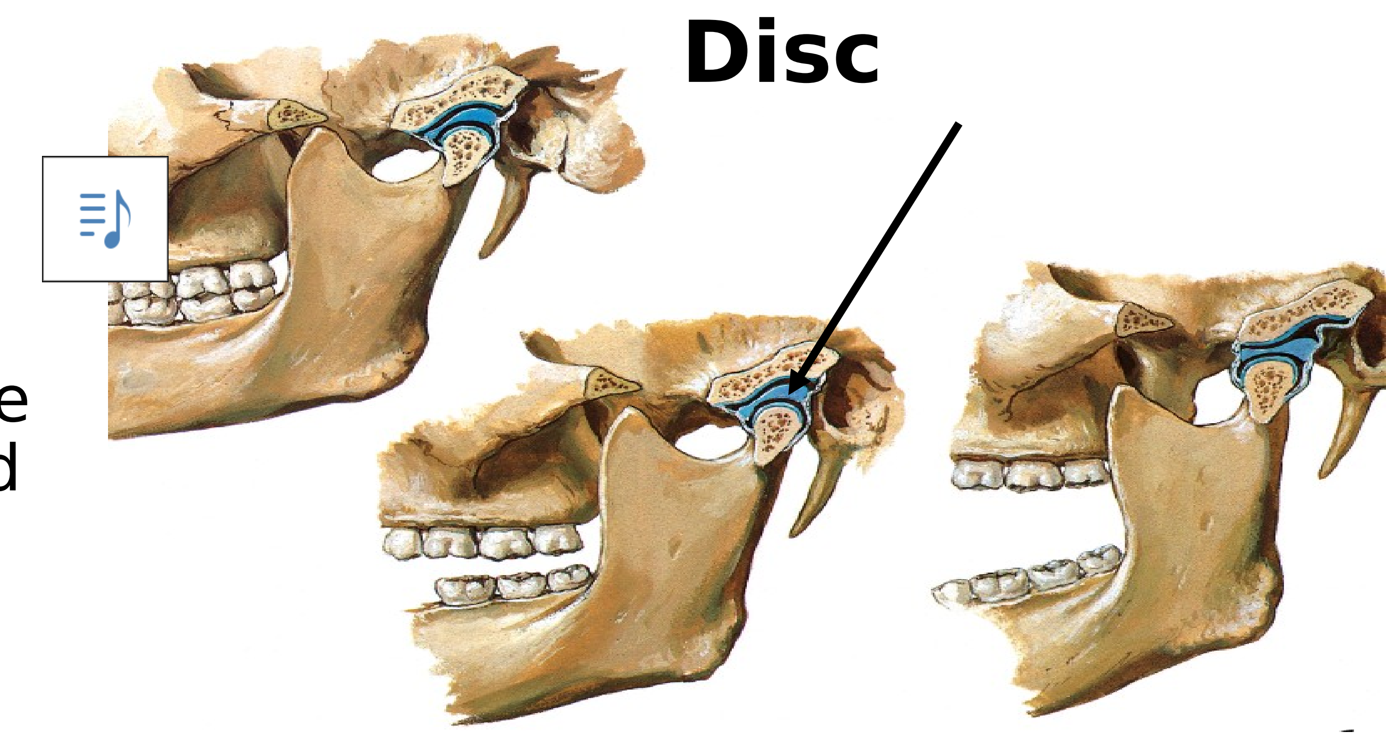
B

Lateral pterygoid muscle
Forward movement of disc and mandible at upper joint
Protrusion
Depression
Hinge movement at lower joint

Articular disc



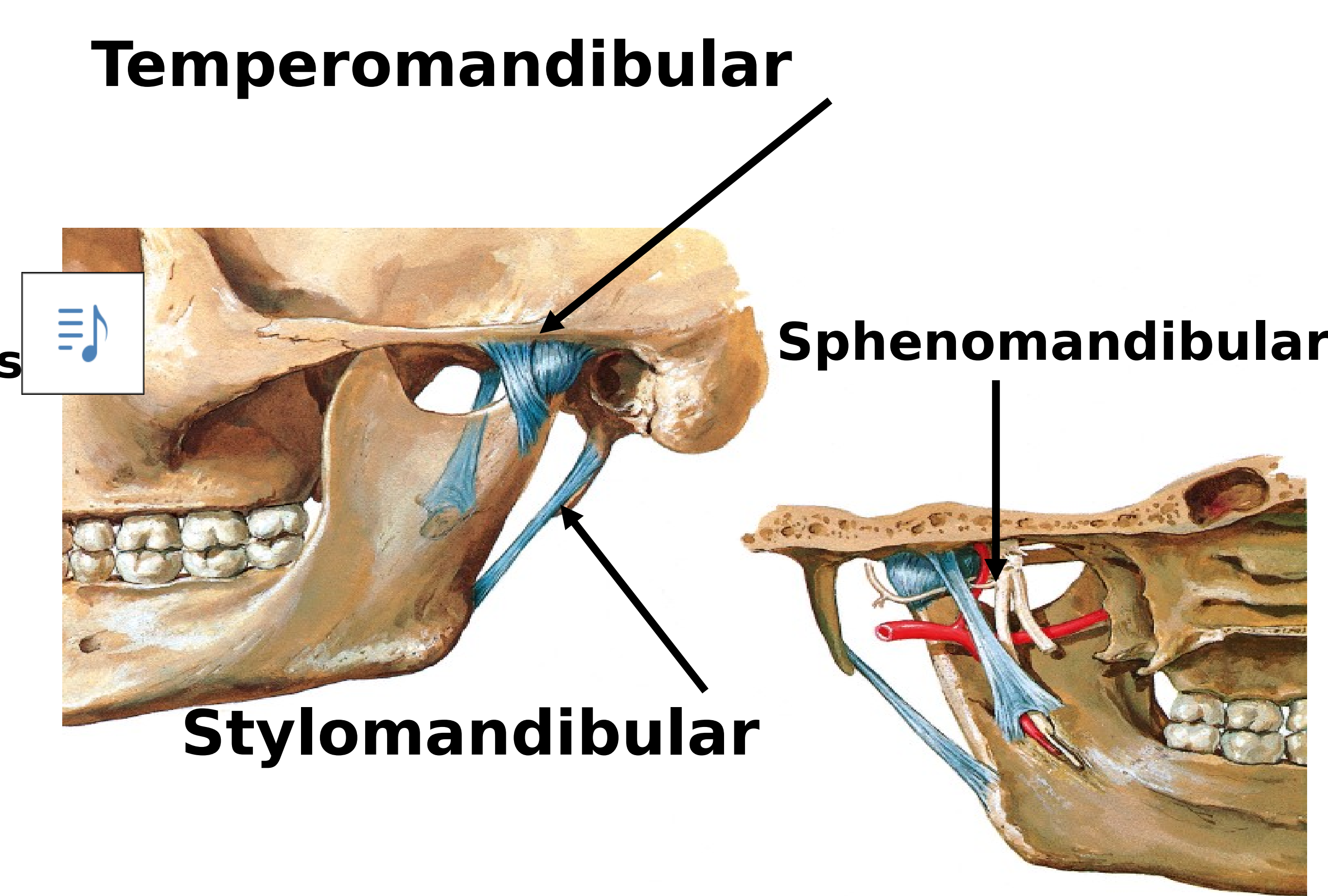
- It is made of fibrocartilage
- Upper surface is concavo convex
- Lower surface is concave
- Divides the joint into upper & lower compartments
- It is attached to fibrous capsule and tendon of lateral pterygoid and head of mandible.



Ligaments of TMJ



- **Lateral ligament**:
  - ➢ **Extends from tubercle of zygomatic arch to lateral side of neck (lateral)**
  - ➢ **Strongest ligament & prevents posterior dislocation**
- **Stylomandibular** :
  - ➢ **Extends from Apex of styloid process to Angle of mandible(posterior)**
  - ➢ **it is a condensation of deep fascia (investing layer).**
- **Sphenomandibular**:
  - ➢ **Extends from spine of sphenoid to lingula (medial)**
  - ➢ **It is an embryological remnant**



Atlas Frank Netter 2016

TMJ



- The strongest ligament of TMJ is……………..
- Sphenomandibular liament is attached to ……………………….
- Articular disc is made of …………

Movements of TMJ



- **Protrustion**: both lateral and medial pterygoid.
- **Retraction**: by temporalis
- **Depression**: by lateral pterygoid
- **Elevation**: masseter, medial pterygoid and temporalis
- **Side to side movement:** edial and lateral pterygoid of one side alternating with other side

Nerve and blood supply



Nerve supply

- Auriculotemporal nerve
- Nerve to masseter for proprioception

Blood supply:

- Superficial temporal
- Maxillary artery



Applied Anatomy

Dislocation is prevented posteriorly by lateral temperomandibular ligament protecting external auditory meatus

Dislocation is common anterior

•

Questions



1. All muscles of mastication are supplied by ….. Except…….. By …….
2. The only retractor of mandible is…..
3. The main depressor is…
4. Side to side movements done by…………
5. The strongest ligament of TMJ is…..
6. A ligament of TMJ derived from fascia is….
7. Dislocation is common in the following direction…..

SUGGESTED TEXTBOOKS



1. Clinical anatomy by regions by Richard Snell

